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(दूसरा पुनरीक्षण)

**Animal Casings —
Grades and Specification**
(*Second Revision*)

ICS 67.120.10

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FOREWORD

This Indian Standard (Second Revision) was adopted by the Bureau of Indian Standards, after the draft finalized by the Slaughterhouse and Meat Industry Sectional Committee had been approved by the Food and Agriculture Division Council.

Animal casings are generally obtained from the intestines of sheep, goats, cattle and hogs, and are mainly used in the production of sausages and also for non-edible purposes, such as surgical sutures, guts for sports goods and strings for musical instruments. The process of manufacture of animal casings has been included in this standard as a guide (*see Annex A*). In view of the common trade practice, the term 'sheep casings' has been used in this standard to include 'goat casings' also.

This standard was first published in 1962 and subsequently revised in 1978. The first revision was undertaken to incorporate modifications like, inclusion of dry ready-to-wet casings; and to align various grades with the grades laid down under the *Animals Casings Grading and Marking (Amendment) Rules*, 1975.

The second revision has been undertaken to align various grades of animal casings specified in this standard with the grades laid down under the amended *Animals Casings Grading and Marking Rules* as amended in 1997. Particularly the calibration of various grades of animal casings has been modified to align with the said rules. This standard is subject to the provisions of the said rules. In this revision grades 'bladder', 'weasands', 'bungs', and 'fat ends' have been incorporated for dried cattle casings and salted cattle casings.

While formulating this standard, due consideration has been given to the relevant rules prescribed by the *Food Safety and Standards Act*, 2006 and *Legal Metrology (Packaged Commodities) Rules*, 2011. This standard is however, subject to the restriction imposed under these, wherever applicable.

For the purpose of deciding whether a particular requirement of this standard is complied with the final value, observed or calculated, expressing the result of a test or analysis shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

ANIMAL CASINGS — GRADES AND SPECIFICATION

(*Second Revision*)

1 SCOPE

This standard specifies the requirements and methods of sampling and test for animal casings derived from sheep, goats, cattle and hogs.

2 REFERENCES

The standards given below contain provisions which, through reference in this text, constitute provisions of this standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below:

<i>IS No.</i>	<i>Title</i>
IS 253 : 2014	Specification for common salt (<i>fourth revision</i>)
IS 1982 : 2015	Antemortem and post-mortem inspection of meat animals — Code of practice (<i>second revision</i>)
IS 4905 : 2015	Random sampling and randomization procedures (<i>first revision</i>)
IS 10500 : 2012	Drinking water — Specification (<i>second revision</i>)

3 TERMINOLOGY

For the purpose of this standard, the following definitions shall apply.

3.1 Black Node

Black node is usually caused by the residue of the ingesta or slime left behind in the casing.

3.2 Calibration

- Measurement of the diameter of the casing in the case of wet-salted casings;
- Flat measure (half circumference) in the case of dried casings; and
- Measurement of the diameter of the casings after their treatment with water for at least fifteen min in the case of dry ready-to-wet casings of sheep and goat. The diameter is found out by inflating the casing with air or water and measuring the

diameter by means of suitable calibration frames after properly stretching out the casing wall and taking the mean of several readings.

3.3 Cattle

Includes bull, cow, ox, heifer, calf, steer, bullock and buffalo.

3.4 Cattle Casing

Includes the following:

- Fat End* — The terminal end of the large intestine measuring about 1.5 m in length from the anus.
- Middle* — Remaining part of the large intestine.
- Bung* — Caecal part of the intestine.
- Runner* — Small intestine.
- Bladder*
- Weasand* — Gullet or oesophagus.

3.5 Cicatrix

Scar of healed-up wound.

3.6 Domestic

Small grease spot in the casing.

3.7 Kink

Twisted loop in the casing.

3.8 Nodule

Small rounded structure.

3.9 Rings and Hanks

Bundles of casings. These shall be as follows:

- Rings of sheep and goat casings* — A ring shall contain not more than 4 pieces and shall measure at least 21 m in length, no single piece measuring less than 1.5 m.
- Rings of hog casings* — A ring shall contain not more than 4 pieces and shall measure at least 9 m, no single piece measuring less than 1 m.
- Hanks of sheep or goat casings* — A hank shall consist of not more than 18 pieces and shall measure at least 92 m in length.
- Rings, hanks or cocoons of dry ready-to-wet casings of sheep and goats* — May be made up of several pieces joined together with adhesive and other approved materials; each single piece shall measure not less than 1.5 m.

- e) *Hanks of cattle casings* — The minimum length of a hank shall measure as follows:

Dried runners	180 m
Dried middles	90 m or a packet of 25 m
Salted runners	30 m
Salter middles	18 m

No single piece shall measure less than 1 m.

3.10 Rust

Black spots caused by putrefaction due to bacterial or fungal action.

3.11 Salt Burn

Areas of discoloration generally caused by:

- The entry of air-into tin containers in which the casings are packed, and
- By the use of poor quality salt.

4 TYPES

The animal casings shall be of the following types:

- Dried cattle casings known commercially as 'Beef Casings';
- Salted cattle casings known commercially as 'Beef Casings'
- Salted sheep casings (including goat casings) known commercially as 'Sheep Casings';
- 'Dry ready-to-wet' sheep casings (including goat casings) known commercially as 'Sheep Casings'; and
- Salted hog casings known commercially as 'Hog Casings'.

5 GRADES

The grade designation for animal casings shall be as given in Table 1.

6 REQUIREMENTS

6.1 General

6.1.1 The casings shall be obtained from healthy animals slaughtered in licenced premises and subjected to ante-mortem and post-mortem inspection according to the procedure prescribed in IS 1982.

6.1.2 The casings shall be prepared under hygienic conditions and shall be wholesome and otherwise fit for human consumption.

6.1.3 The casings shall not have been subjected to any bacterial activation or fermentation.

6.1.4 The casings shall be free from any parasitic infestation and from scars of healed-up wounds.

6.1.5 Quality of water used for processing shall be of potable quality (*see* IS 10500).

6.2 Preservatives

Preservatives other than common salt (*see* IS 253) shall not be used.

6.3 Calibration and Individual Requirements

6.3.1 Dried Cattle Casings

Dried cattle casings shall comply with calibration and requirements given in Table 2.

6.3.2 Salted Cattle Casings

Salted cattle casings shall comply with calibration and requirements given in Table 3.

Table 1 Grade Designation for Animal Casings

(Clause 5.1)

Sl No.	Type of Cattle Casings	Grade Designation
(1)	(2)	(3)
i)	Dried cattle casings	Prime Quality (PQ), Grade I, Grade II, Grade III, Bladder, Weasands, Bungs, and Fat ends.
ii)	Salted cattle casings	Prime Quality (PQ), Bladder, Weasands, Bungs, and Fat ends.
iii)	Salted sheep casings (including goat casings)	Prime Quality (PQ) or Grade I, Grade II, and Grade III.
iv)	'Dry ready-to-wet' sheep casings (including goat casings)	Prime Quality (PQ) or Grade I, Grade II, and Grade III.
v)	Salted hog casings	Prime Quality (PQ)

Table 2 Calibration and Requirements for Dried Cattle Casings

(Clause 6.3.1)

SI No.	Grade Designation		Calibration	Requirements
(1)	(2)		(3)	(4)
i)	Prime (PQ)	Quality	The calibration shall be by flat measure, in steps of 5 mm for example, 35 mm and below, above 35 mm to 40 mm, above 40 mm to 45 mm and so on up to 65 mm and above 65mm; or in steps of 2 mm for example, 35 mm and below, above 35 mm to 37 mm, above 37 mm to 39 mm. and so on up to 65 mm and above 65 mm; or as agreed to between the purchaser and the vendor.	The casings shall be of uniform natural colour, lustrous throughout without any spot or mark and free from discolouration. The casing wall shall be intact, free from any tear or laceration and shall be perfectly rolled. The casings shall also be free from salt burns, rust, domestics, black nodes, slime, mucus, dung, mould or fungus infestation and free from defects like holes, blisters, lacerations, nodules and cicatrices.
ii)	Grade I		The calibration for Grade I shall be same as for grade PQ.	The requirements for this grade shall be the same as for grade PQ except that a slight deviation in colour and folds and a few black nodes shall be permitted. Total fat streaks shall not exceed 40 per meter; a streak of fat shall not exceed 30 mm in length and 10 mm in breadth. The middle of the seam shall be free from fat-streaks.
iii)	Grade II		The calibration for Grade II shall be same as for Grade PQ.	Casings not conforming to Grade PQ or Grade I due to defect in rolling and/or having larger black nodes or rough texture or streaks of fat not exceeding 60 in a meter shall be classed in this grade.
iv)	Grade III		The calibration for Grade III shall be same as for grade PQ	This grade shall include short pieces of any or all of the above grades and/or having fat streaks in excess of 60 in a meter.
v)	Bladder		—	Bladder, otherwise conforming to requirements of grade PQ
vi)	Weasands		—	Weasands, otherwise conforming to requirements of Grade PQ
vii)	Bungs		—	Bungs, otherwise conforming to requirements of grade PQ.
viii)	Fat ends		—	Fat ends, otherwise conforming to requirements of grade PQ.

Table 3 Calibration and Requirements for Salted Cattle Casings

(Clause 6.3.2)

SI No.	Grade Designation		Calibration	Requirements
(1)	(2)		(3)	(4)
i)	Prime (PQ)	Quality	The calibration shall be by diameter, in steps of 2 mm for example up to 28 mm, above 28 mm to 30 mm, and so on up to 40 mm and above 40 mm; or as agreed to between the purchaser and the vendor	The casings shall be of uniform natural colour, lustrous throughout without any spot or mark and free from discolouration. The casing wall shall be intact, free from any tear or laceration and shall be perfectly rolled. The casings shall also be free from salt burns, rust, domestics, black nodes, slime, mucus, dung, mould or fungus infestation and free from defects like holes, blisters, lacerations, nodules and cicatrices. On being inflated with air, rolled round the finger and pressed, the casings shall burst with a sharp sound
ii)	Bladder		—	The wall shall be of uniform natural colour, lustrous throughout without any spot or mark and free from discolouration. The material shall be free from any tear or laceration. The material shall also be free from salt burns, rust, domestics, black nodes, slime, mucus, dung, mould or fungus infestation and free from defects like holes, blisters, nodules and cicatrices

Table 3 (Concluded)

Sl No.	Grade Designation	Calibration	Requirements
(1)	(2)	(3)	(4)
iii)	Weasands	—	Weasands, otherwise conforming to requirements of 'Bladder.
iv)	Bungs	—	Bungs, otherwise conforming to requirements of 'Bladder'
v)	Fat ends	—	Fat ends, otherwise conforming to requirements of 'Bladder'

6.3.3 Salted Sheep Casings (Including Goat Casings)

Salted sheep casings (including goat casings) shall comply with calibration and requirements given in Table 4.

6.3.5 Salted Hog Casings

Salted Hog Casings shall comply with calibration and requirements given in Table 6.

6.3.4 'Dry Ready-to-Wet' Sheep Casings

'Dry ready-to-wet' sheep casings shall comply with calibration and requirements given in Table 5.

Table 4 Calibration and Requirements for Salted Sheep Casings (Including Goat Casings)

(Clause 6.3.3)

Sl No.	Grade Designation	Calibration	Requirements
(1)	(2)	(3)	(4)
i)	Prime Quality (PQ) or Grade I	The calibration shall be 12 mm to 26 mm. in steps of 2 mm, for example, up to 12 mm., above 12 mm to 14 mm., above 14 mm. to 16 mm etc.; or 13 mm to 27 mm in steps of 2 mm. for example up to 13 mm., above 13 mm. to 15mm, above 15mm. to 17 mm. etc.; or as agreed to between the purchaser and the vendor.	The casings shall be of natural colour throughout without any discolouration. The casing wall shall be intact and not torn or lacerated. The casings shall also be free from salt burns, rust, domestics, black nodes, slime, mucus, dung, mould or fungus infestation and free from defects like holes, blisters, lacerations, nodules and cicatrices. The casing shall not burst when filled with air or water to its normal capacity and slightly pressed. The rings or hanks shall have been cured properly with common salt (<i>see</i> IS 253).
ii)	Grade II	The calibration for Grade II shall be same as for grade PQ	The requirements for this grade shall be the same as for grade PQ except that a slight deviation shall be allowed in respect of colour and/or strength and pinholes on walls not exceeding 2 in a meter. The material should be fit for use in preparation of sausages.
iii)	Grade III	The calibration for Grade III shall be same as for grade PQ	The requirements for this grade shall be the same as for Grade II except that the presence of nodules shall be permitted

**Table 5 Calibration and Requirements for
'Dry Ready-to-Wet' Sheep Casings**
(Clause 6.3.4)

SI No. (1)	Grade Designation (2)	Calibration (3)	Requirements (4)
i)	Prime Quality (PQ) or Grade I	The calibration shall be 12 mm to 26 mm. in steps of 2 mm., for example, up to 12 mm., above 12 mm to 14 mm., above 14 mm. to 16 mm etc.; or 13 mm to 27 mm in steps of 2 mm. for example, up to 13 mm., above 13 mm. to 15 mm, above 15 mm. to 17 mm. etc.; or as agreed to between the purchaser and the vendor.	The casings shall be of natural colour throughout without any discolouration. The casing wall shall be intact and not torn or lacerated. The casings shall also be free from salt burns, rust, domestics, black nodes, slime, mucus, dung, mould or fungus infestation and free from defects like holes, blisters, lacerations, nodules and cicatrices. The casing shall not burst when filled with air or water to its normal capacity and slightly pressed. The rings or hanks shall have been cured properly with common salt (see IS 253).
ii)	Grade II	The calibration for Grade II shall be same as for grade PQ	The requirements for this grade shall be the same as for grade PQ except that a slight deviation shall be allowed in respect of colour and/or strength and pinholes on walls not exceeding 2 in a meter. The material should be fit for use in preparation of sausages.
iii)	Grade III	The calibration for Grade III shall be same as for grade PQ	The requirements for this grade shall be the same as for Grade II except that the presence of nodules shall be permitted

**Table 6 Calibration and Requirements for
'Dry Ready-to-Wet' Sheep Casings**
(Clause 6.3.5)

SI No. (1)	Grade Designation (2)	Calibration (3)	Requirements (4)
i)	Prime Quality (PQ)	The calibration shall be 12 to 26 mm. in steps of 2 mm., for example, up to 12 mm., above 12 mm to 14 mm., above 14 mm. to 16 mm etc.; or 13 to 27 mm in steps of 2 mm. for example, up to 13 mm., above 13 mm. to 15mm, above 15 mm. to 17 mm. etc.; or as agreed to between the purchaser and the vendor.	The casings shall be of natural colour throughout without any discolouration. The casing wall shall be intact and not torn or lacerated. The casings shall also be free from salt burns, rust, domestics, black nodes, slime, mucus, dung, mould or fungus infestation and free from defects like holes, blisters, lacerations, nodules and cicatrices. The casing shall not burst when filled with air or water to its normal capacity and slightly pressed. The rings or hanks shall have been cured properly with common salt (see IS 253).

7 PACKING AND MARKING

7.1 Packing

Unless agreed otherwise, between the purchaser and the vendor, the rings or hanks of the casings shall be packed in suitable containers lined with polyethylene. Casings of only one type shall be packed in a lot.

7.2 Marking

Each container shall be marked with the following information:

- Name, type and grade of the material;
- Name of the manufacturer;

- Batch or code number;
- Calibration;
- Number of hanks or rings;
- Date of packing; and
- Any other marking required under the *Legal Metrology (Packaged Commodities) Rules, 2011*, and the *Food Safety and Standards (Packaging and Labelling) Regulation, 2011*.

7.3 BIS Certification Marking

The product may also be marked with the Standard Mark.

7.3.1 The use of the Standard Mark is governed by the provisions of *Bureau of Indian Standards Act, 2016* Rules and Regulations framed there under. The details of the conditions under which the licence for use of the Standard Mark may be granted to manufacturers or producers may be obtained from the Bureau of Indian Standards.

8 SAMPLING

Representative samples of the material for tests shall be drawn as prescribed in Annex B.

9 TESTS

Shake the test sample (see **B-2.4**) free of salt and soak in water for about an hour. Measure the lengths and inflate the casings with water or air and check the diameter and defects, like holes, punctures, pimples, etc. Also carry out the test for strength.

ANNEX A

(Foreword)

PROCESSING OF ANIMAL CASINGS

A-1 GENERAL METHOD

A-1.1 While the slaughtered animal is being dressed, the viscera is removed in such a way that it does not get contaminated with the intestinal refuse. Immediately after the removal of the stomach, the intestines along with the peritoneal and mesenteric covering are sent to the gut and tripe room. The intestines are then separated from their mesenteric attachments by easy pulls. Before disengaging the intestines from their attachments, it may be advantageous to put the intestines along with the peritoneal and mesenteric covering in barrels with crushed ice or ice-cold water till the fat surrounding the guts sets. This step might make it easier to pull the intestines from their attachments without much damage. After the removal of the intestines from their attachments, the contents of the intestines should be stripped off by uniformly gentle pressing and by drawing the gut between the fingers. The guts should then be washed thoroughly by flushing with tap water at full pressure. The guts are then taken to the casings factory in barrels packed with crushed ice.

A-1.2 In the casings factory, the guts are given a thorough rinse in ordinary tap water after allowing to remain for some time so that the chill due to packing in ice is taken off, if processed immediately. Otherwise, the guts are kept in wooden barrels in ice-cold water overnight. Next morning, they are processed. All adhering fat and tissue are removed with knife or scissors. Defatting of the guts with such mechanical implements does not completely remove the fat in the case of cattle casings. In such case, the guts should be treated with warm water at 35 to 40°C and the fat so loosened trimmed off. The guts are then completely washed in ordinary water.

A-1.3 The next step is to remove the mucus and slime. For this purpose implements with smooth surface should be used. In the case of cattle casings, the guts are turned inside out and the mucus and slime are removed by scraping with smooth-edged implements. Care should be taken not to lacerate the casing wall. Complete removal of slime and mucus is very important as these affect the appearance and shine of the wall. Complete removal of the slime and mucus gives a bright and whiter appearance to the casing.

A-1.4 During washing with water, all the holes and other defects, such as blisters, pimples, etc, should be detected and preliminary assortment of the guts should be done. In the case of cattle casings, this is done at the time of inflation with air.

A-1.5 In the case of dried cattle casings, the next step is the inflation of the guts with air and drying. The air should be blown by mechanical means and care should be taken to blow air in such a manner that the gut spreads out fully and expands evenly. It should not be too tense nor should it leave any folds or kinks in the gut. Correct blowing is very important as it influences calibration.

A-1.6 Drying of casings in shaded places should be preferred to the direct hot sun as the former facilitates gradual and uniform drying. When the casings are subjected to direct hot sun, the superficial layer dries and contracts before the internal layers are properly dried. This reduces the keeping quality. If the casings are left too long in the sun, the surface gets too dark and the color is affected.

A-1.7 After the casings are dried, the air is expelled by pressing the guts between rollers. Metal rollers with smooth, even and exacting surfaces should be used. While pressing the guts between the rollers, care should be taken to see that uniform pressure is applied at all the points of the exacting-surfaces of the rollers, so that the gut is pressed evenly and it spreads properly.

A-1.8 While feeding the gut to the pressing machine, the gut should be led dorso-ventrally to the pressing surfaces and the gut should be at right angles to the surface. This will facilitate the formation of fine, uniform marbling lines in the gut wall (dorsal part). If it is not led at right angles to the surface, folds and kinks would form in the gut wall.

A-1.9 Calibration of the casings should be done between the dorso-ventral points. If there are wrinkles, overlapping or folds in the casing wall, these should be spread out properly before measuring and the mean of several readings should be taken.

A-1.10 The calibrated casings should be graded and assorted and prepared in rings or hanks. In damp atmosphere and on rainy days, a further step for thorough dehydration should be taken. The casings may be hung up in a hall in rows one above the other and hot air passed through. Charcoal fire should be avoided as the smoke, even in traces, darkens the casing wall.

A-1.11 Sheep casings are packed wet. After they are cleaned as described in A-1.3 they are calibrated and assorted in different grades. Rings or hanks are prepared and these are stuffed with common salt and allowed to remain for at least 3 to 4 days after which they are taken out, cleared of excess salt and packed in wooden barrels with layers of common salt.

ANNEX B

(Clause 8.1)

SAMPLING OF ANIMAL CASINGS

B-1 GENERAL REQUIREMENTS OF SAMPLING

B-1.0 In drawing, storing and handling samples, the following precautions and directions shall be observed.

B-1.1 Samples shall be taken in a protected place not exposed to dust or soot.

B-1.2 Samples shall be protected from adventitious contamination.

B-1.3 The sample containers shall be sealed air-tight after filling and marked with full details of sampling, date of sampling, batch or code number, name of manufacturer and other important particulars of the consignment.

B-1.4 The samples shall be stored in such a manner that there is no deterioration of the material.

B-1.5 Sampling shall be done by a person agreed to between the purchaser and the vendor and if desired, in the presence of the purchaser (or his representative) and the vendor (or his representative).

B-2 SCALE OF SAMPLING**B-2.1 Lot**

In any consignment, all the containers of the same size and from the same batch of manufacture, shall be grouped together to constitute a lot.

B-2.1.1 Samples shall be tested for each lot for ascertaining the conformity of the material with the requirements of this standard.

B-2.2 The number of containers to be selected from each lot shall be in accordance with col 1 and 2 of Table 1.

B-2.3 The containers shall be selected at random. In order to ensure the randomness of selection, a random number table (*see* IS 4905) shall be used. In case such tables are not available, the following procedure may be adopted:

- a) Starting from any container, count them as 1, 2, 3,....., up to r and so on in a systematic manner and withdraw every r^{th} container, r being the integral part of N/n .

where,

N = total number of containers, and

n = number of containers to be selected (*see* Table 1).

- b) Every r^{th} container thus counted shall be separated until the requisite number of containers is obtained from the lot to give samples for test.

B-2.4 Test Samples

From each of the containers selected as in **B-2.2** and **B-2.3**, draw at random from different parts of the same container, at least one percent of the total number of hanks or rings packed in it. This shall constitute the test sample for that particular container and shall be tested for the requirements prescribed in 6, as applicable.

B-3 CRITERION FOR CONFORMITY

A lot shall be considered as conforming to the requirements of this standard if all the samples tested satisfy the requirements prescribed for the various characteristics in 6, as applicable.

Table 1 Number of Containers to be Selected From a Lot

(Clause B-2.2)

Number of Containers in the Lot (N)	Number of Containers to be Selected (n)
(1)	(2)
2 to 15	2
16 to 40	3
41 to 65	4
66 to 110	5
111 to 250	7
Above 250	10

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